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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/567,360  
Filing Date: September 25, 2006  
Appellant(s): HANITA ET AL.

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Thomas M. Hunter  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 08/26/2011 appealing from the Office action mailed 03/17/2011.

**(1) Real Party in Interest**

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The following is a list of claims that are rejected and pending in the application:

Claims 1 and 3-16 are pending.

**(4) Status of Amendments After Final**

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

**(5) Summary of Claimed Subject Matter**

The examiner has no comment on the summary of claimed subject matter contained in the brief.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

**(7) Claims Appendix**

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

**(8) Evidence Relied Upon**

JP 2002-241608	Kikuchi et al.	2002
2003/0130405	Takagi et al.	07-2003

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 3-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuchi et al. (JP 2002-241608, hereinafter "Kikuchi") in view of Takagi et al. (US 2003/0130405, hereinafter "Takagi").

Kikuchi discloses a container formed from an oxygen uptake nature resin composition [0001]. The resin combines a polyamide resin, an oxidizing organic component, and a transition metal system catalyst [0011]. The terminal amino group

concentration is not more than  $40 \text{ eq}/10^6 \text{ g}$  [0011]. The polyamide is derived from a xylylenediamine and a dicarboxylic acid component [0011]. The oxidizing organic components are a polymer derived from polyenes, especially an acid denaturation polyene system polymer [0011]. The transition metal system catalyst is carboxylate of cobalt [0011]. The oxidizing organic component contains 0.01-10% of the weight of the resin composition [0011]. The transition metal system catalyst is contained in a quantity of 100-3000ppm [0011]. The resin sheet can be laminated to another layer to form a multilayer structure [0035].

Kikuchi is silent with regards to the resin composition as the island portion in an island-in-the-sea structure with an additional resin component as the sea portion.

Takagi discloses a thermoplastic resin composition that has an island-and-sea micro structure constituted by component A and component B [0010]. Components A are amorphous thermoplastic resins and components B are crystalline thermoplastic resins [0013]. Component A is the island phase and component B is the sea phase in the micro structure [0047]. The examiner would like to note that component A of Takagi represents component B of the claimed invention and component B of Takagi represents component A the claimed invention. Component A consists of amorphous polyamides [0015] where component B consists of thermoplastic resins such as PET [0037]. The size of the island phase is usually 0.1 to 10  $\mu\text{m}$  in major diameter [0046]. The thermoplastic resin composition makes molded articles with excellent mechanical strength [0047]. Since the thermoplastic resin composition according to the present invention is provided with an island-and-sea micro structure by combining two different

types of thermoplastic resin, the composition is improved in molding workability with no serious compromise in fluidity [0060].

It should be noted that the ratio of the whole surface area of the island portions of the oxygen absorbing functional component in the oxygen absorbing layers to the volume of the packing container is not smaller than  $20\text{ cm}^{-1}$  is a result effective variable. As the ratio N/M decreases, the oxygen absorbing layers have decreased oxygen absorbing properties. Absent unexpected results, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the ratio (N/M) in the oxygen absorbing layers since it has been held that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955). In the present invention one would have been motivated to optimize the ratio (N/M) in the oxygen absorbing layers in order to improve the oxygen absorbing properties and gas barrier properties of the containers, thus preventing oxygen to be dissolved in the contents of the containers.

It would be obvious to one of ordinary skill in the art to combine the island-and-sea micro structure of Takagi with the resin composition of Kikuchi, because the island-and-sea micro structure of Takagi enables a thermoplastic resin to have improved molding workability and excellent mechanical properties, thus producing a packing container, when Takagi and Kikuchi are combined, with excellent oxygen absorbing properties and processability.

#### **(10) Response to Argument**

The applicant has claimed a packing container that comprises a layer that is formed from a base material resin component (A) and an oxygen absorbing functional component (B), the base material resin component (A) forms a sea portion of a continuous phase and the oxygen absorbing functional component (B) is forming island portions of a dispersed phase. The island-in-the-sea structure of a composite is typically used within the art to provide a two-phase morphology. The two-phase morphology allows the composite to have an amorphous resin and a crystalline resin. The combination of the two allows for the resin to a semi-crystalline structure, which provides a stronger resin and a resin more resistant to gas diffusion than amorphous resin alone. Thus, it is known in the art to use an island-in-the-sea structure to improve barrier properties of layers.

In the independent claim, the components of the oxygen absorbing layers are not specified in terms of what comprises the base material resin component and the oxygen absorbing functional component. Thus, the oxygen absorbing functional component could comprise more than one oxygen reducing material, such as an oxidizing organic component and a transition metal. The Kikuchi reference teaches a container that is formed from an oxygen uptake nature resin. The resin combines a polyamide resin, an oxidizing organic component and a transition metal. The resin material of Kikuchi does not teach the use of an island-in-the-sea structure. However, Kikuchi discloses that the oxidizing component contains 0.01 to 10% by weight of the resin composition [0011], thus one of ordinary skill in the art would understand that it is a minor component. Takagi is used as a secondary reference to teach an island-in-the-sea structure that

uses an amorphous polyamide resin in the continuous phase and crystalline thermoplastic resin in the island phase. The resin of Takagi also contains a carbon black component that is dispersed as the island phase, which provides a thermoplastic resin composition which suffers no excess reduction of fluidity and is capable of providing a molded article with excellent conductivity and antistatic properties. The teaching of Takagi provides the understanding that that the dispersion of the island component provides the resin with those specified properties of the island component. Thus, the composition of Kikuchi with the adaption of the island-in-the-sea phase would provide a resin with the oxidizing organic component and transition metal in the island phase dispersed throughout the resin, which would enhance the barrier properties.

The applicant argues that the examiner has taken the position that the ratio of the whole surface area of the island portions of the oxygen absorbing functional component in the oxygen absorbing layers to the volume of the packing container is not smaller than 20 is a result effective variable without evidence. However, the examiner respectfully disagrees.

Kikuchi provides the general conditions for the parameter of the ratio N/M. Kikuchi discloses that while polyamide resin has oxygen barrier properties, these barrier properties degrade over time thus causing more oxygen to penetrate the contents of the bottle causing deterioration of the contents [0002]. Kikuchi discusses that by utilizing an oxidizing organic component, such as a polymer derived from polyenes [0018], the oxidizing organic component will provide additional oxygen uptake properties to the resin without reducing the barrier properties of the polyamide [0013]. Thus, it would be



determined from the prior art that there is a general parameter in regards to relationship between the volume of the packing container and the surface area in which is saturated by the oxidizing organic component. Thus, when general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

In view of the foregoing, the examiner respectfully request the Board to uphold the rejection of Claims 1 and 3-16 over the combination of Kikuchi and Takagi.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/ELLEN S WOOD/

Examiner, Art Unit 1782

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